

Systematics of Ants

THE systematics of almost all ant genera have been in confusion up to the present. This lack of order is caused mainly by the following: (1) Forms of trivial infraspecific nature (for example, colour) were badly described in nomenclature; (2) Relatively stable diagnostic characteristics (for example, ♀♀, ♂♂ and ♂♂, terminalia, genitalia) were frequently ignored; (3) Descriptions, based on the phenotype, were given of specimens which are not representative, either for a population (nest, colony) or for a 'species' (for example, one or a few workers only were used).

However, many attempts were made by taxonomists to clear the undesirable tangle. Unfortunately only a few of them proved to be successful. Despite the revision of *Lasius* by Wilson¹, which is very reliable, the identification of Eurasian *Cautolasius* and *Chthonolasius* remains a problem. The methods which I have been using in my investigation of some species of *Lasius* were as follows:

Obtaining a pure line. There are at least two appropriate ways of achieving this aim: (1) by inbreeding (adelphogamy); (2a) by parthenogenesis of virgin queens; (b) by parthenogenesis of virgin workers.

The latter seems to be rather successful in non-parasitic species of *Lasius*, although a large number of cultures is needed.

It has been known for a long time^{2,3} that workers may lay eggs, which develop into queens, workers or males. In some papers dealing with the progeny of homozygous females it was uncertain if the workers used were in fact virgin.

I collected larvæ and workers of *Lasius flavus* [(subgenus, *Cautolasius*) for culture in the laboratory. As soon as the larvæ had developed into pupæ, the workers were collected and treated with carbon dioxide. They were marked by amputation of a tarsus and put back with the pupæ, where they recovered. After the imagines had hatched the 'old' and the 'new' workers were narcotized with carbon dioxide and separated. After some time had elapsed the virgin workers became reproductive. The larvæ developed slowly. When they had reached the pupal (nymphal) stage, the virgin workers were removed, anesthetized and marked. Thereafter they were put back with their brood until the imagines hatched. The group of 'new' workers also became reproductive after they had been separated from their nurses and produced males and workers, also.

Experiments were conducted to have the brood *Lasius flavus* adopted by workers of *Lasius niger* and *Lasius alienus*. The results obtained were unsatisfactory.

Very little is known about the cyto-taxonomy and genetics of ants^{1,2}. The speculative, hypothetic explanations offered in some papers dealing with parthenogenetically produced queens and workers, which might be diploid, must surely be considered as guesses as long as no reliable information is available.

W. LEUTERT*

State Agricultural University,
Wageningen, Holland.

* Present address: East Malling Research Station, Maidstone, Kent.

¹ Wilson, E. O., *Bull. Mus. Comp. Zool.*, **113**, No. 1 (1955).

² Wilson, E. O., *Ann. Rev. Entomol.*, **8**, 345 (1963).

³ Suomalainen, E., *Ann. Rev. Entomol.*, **7**, 349 (1962).

⁴ Hauschteck, E., *Rev. Suisse Zool.*, **68**, 218 (1961); *Vierteljahrschrift der Naturforschenden Gesellschaft in Zurich*, **107**, 213 (1962).

⁵ Ledoux, A., *Recherches sur le cycle Chromosomique de la Fourmi Pileuse Insectes Sociaux*, **1** (1954).